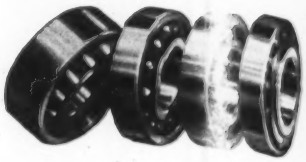
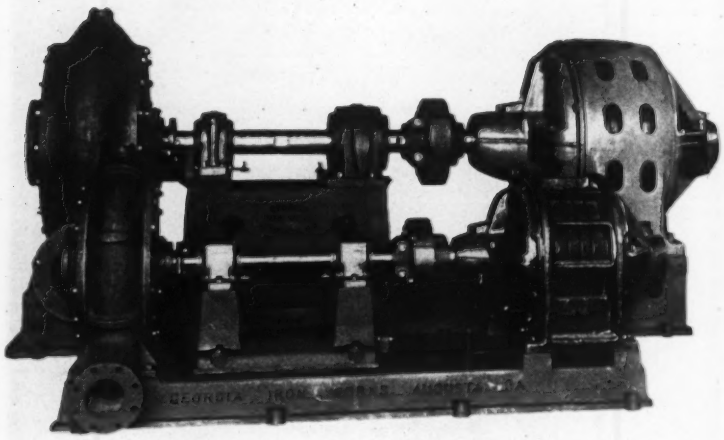
ENGINEERING NEWS-RECORD

Pan American highway speeded by new U.S. loans—*See page 4*

Why does GEORGIA *select* SKF *for* THEIR PUMPS?



After several years' research and experiment, this pump has been developed to meet conditions of production and service "far beyond that of conventional types of pumps now on the market. Actual field tests have shown that these pumps give exceptionally high and sustained efficiency, low maintenance costs, together with production far in excess of the normal capacity."



BUILT BY GEORGIA IRON WORKS

WHAT LED The Georgia Iron Works, after consulting with a number of leading antifriction bearing manufacturers, to select SKF Bearings for this Sand and Dredging Pump? The answer is the same as the one that engineers in *all* the fields of Industry are giving whenever they show a preference for a tough-job bearing on a tough-job machine.

SKF Spherical Roller Bearings have a self-aligning feature which permits them to take extreme loads of high head and heavy duty under severe vibration and adverse working conditions. They eliminate wear at the stuffing box because they're correctly designed, easy to mount and remove, and assure correct alignment. They lock firmly, have ample capacity, and are effectively sealed against lubricant leakage, dust, dirt and moisture. They can do as much for *you,* so see your nearest SKF representative . . . TODAY.

SKF
BALL & ROLLER BEARINGS

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

Defense committee continues fight against lumber price

No shortage seen by raw materials division, which claims industry is well equipped to meet defense and other needs

A new attempt to halt the rise in lumber prices by means of publicity was made by the Defense Commission last week. E. R. Stettinius' raw materials division issued a statement that the lumber industry "is well equipped to meet all of the defense needs for troop housing and other defense purposes, and, at the same time, take care of normal private requirements as well." The statement pointed out that the industry is operating at a rate of about 30 billion board feet of all types of lumber per year and stated that recent "exaggerated rumors" of a possible shortage are unfounded. Recent price increases were blamed upon the demand for quick delivery on about 250,000,000 ft. ordered for army cantonments.

Hartman reports on needs

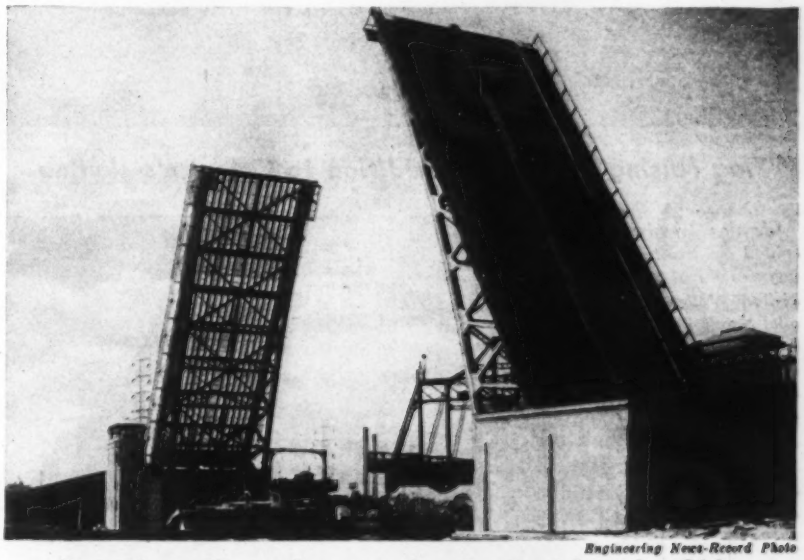
The defense commissioner's statement, however, was made to appear somewhat disingenuous by testimony offered Congress a few days earlier by Gen. C. D. Hartman, head of the construction section of the Quartermaster Corps. The quarter billion board feet already ordered, to which Stettinius referred, was for barracks for the national guard and regular army.

Need 600,000,000 ft. in 60 days

General Hartman, testifying on the barracks construction, which will be required to house the conscript army, said that about 600,000,000 ft. of lumber would be required in the next sixty days. He said the normal production on a one-shift basis of the lumber required for cantonments is about 51,000,000 ft. per week. By stepping up to a two-shift or three-shift basis, he believes production can be increased to 100,000,000 ft. per week. At present, he is having "some difficulty" in obtaining lumber, but he thinks an increased rate of production will solve this.

Cost of temporary wooden construction of the cantonment type has risen about 12½ per cent since last spring. As a result, the Quartermaster Corps has raised its estimate of the cost of housing a soldier in cantonments from the $400 figure of last spring to $450. Housing in wood-floored tents now costs $320 per man instead of the old figure of $285. The cost per man figures for shelter given above include, of course, a great deal besides a place to sleep, such as utilities, auxiliary buildings and sanitation facilities.

Total money available for temporary military shelter this year's appropriations is $550,686,717, or sufficient to house about 1,167,000 men.



Engineering News-Record Photo

Long bascule replaces swing span at Lorain, Ohio

Lorain, Ohio, on Sept. 24, dedicated its two new Black River highway bridges, one of which was pictured in ENR Aug. 29, p. 261. Shown above is the 333-ft. Erie Ave. bascule bridge near the lake front. This structure is said to be the longest highway trunnion bascule in the country and exceeded in length in the trunnion bascule class by only a 338-ft. double leaf railroad bridge built in 1914 at Sault Ste. Marie.

The above bridge is 295 ft. face to face of piers, but due to the skew location provides but 180 ft. of clear channel for the long ore boats transporting cargo to and from the smelters up the river. Total length of bridge is about 1,050 ft. with girder spans varying in length from 55 to 90 ft. used beyond the bascule piers. The deck provides two 22-ft. roadways separated by a 3-ft. central mall and flanked by two 7-ft. sidewalks. The bascule span has open-grid flooring, while the floor of the remainder of the structure is steel grid filled flush with concrete.

Both new bridges were designed and construction supervised by R. L. Harding of Wilbur Watson and Associates, consulting engineers of Cleveland. Harry L. Dunham is county engineer for Lorain County, the owners. The subsubstructure of the bascule bridge was constructed by the Great Lakes Dredge and Dock Co. and the superstructure erected by the Mt. Vernon Bridge Co.

The two bridges cost $2,000,000 and were financed by a bond issue and PWA grant.

Erect company barracks building in three hours

One of the standard army company units—a two-story frame building 43x140 ft. in plan—was framed and erected complete at Camp Pike, Little Rock, Ark., on Aug. 26 in 2 hr. 55 min., by James Stewart & Co., Inc., the company holding the cantonment contract.

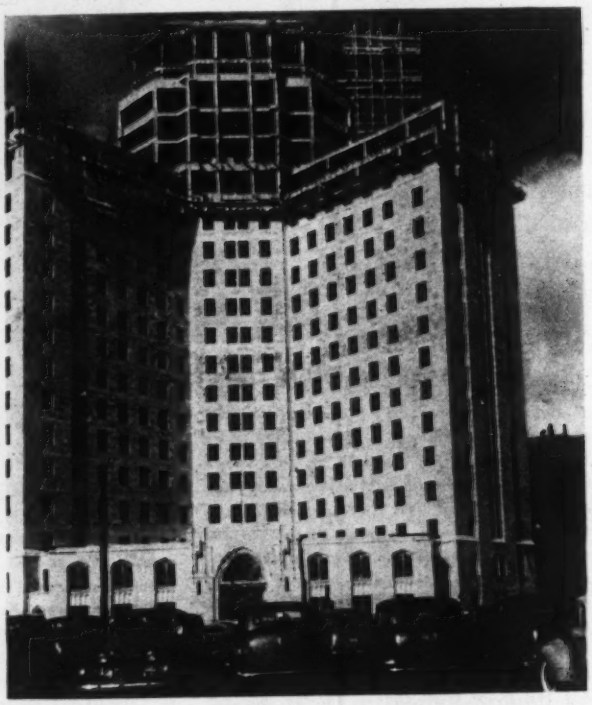
Work was begun at 9 a.m., and at 11:55 the building was enclosed, floors laid, stairs in place, doors hung and windows fitted and screened, roof on, and all scaffolding had been removed and the workmen had left the building.

The amount of lumber required for this size of barracks is 75,000 ft. Two hundred carpenters were employed on the work. A notable feature of the construction was the fact that in spite of the number of workmen and the high speed at which the work was rushed, not a workman received a bruise or scratch.

The schedule of completion was as follows: 9 a.m.—work started; 9:20—posts and studding up for first story; 9:22—joists started for second floor; 10:00—second floor outside frame started; 10:20—second floor outside frame finished, first story trim and millwork finished; 10:45—joists on second floor finished; 11:05—rafters started on roof; 11:30—rafters finished, second story millwork finished; 11:55—scaffolding removed and workmen out of building.

Editor's Note—This account does not pertain to current cantonment construction, but to that for the World War 23 years ago. It was published in *ENR* Sept. 20, 1917, and is republished now at the suggestion of a constructing quartermaster of the U. S. Army, who has charge of a current project and wants to give the present contractors something to shoot at. He points out that 600 man-hours of labor was required to erect the barracks referred to above, while contractors today are figuring on 1,000-man hours for standard barracks buildings of much smaller size, 30x80 ft. in plan. He admits that the above account is no doubt that of a stunt operation but claims that the difference in size of buildings between the old and the new standards more than compensates for any extra speed that might have been attained at Camp Pike by having everything all set.

Flag raising marks new addition to Chicago's skyline



Cheering workmen hoisted the traditional flag on the roof of the 21-story Wesley Memorial Hospital at 11.30 a.m. Sept. 26 to signify topping out of Chicago's newest skyscraper. The building, on East Superior St., is part of the Northwestern University medical school and consists of a 21-story center tower section of steel columns and tie beams with concrete floors. Radiating diagonally from the center section are four 16-story wings of concrete frame and floor construction. The exterior of the entire building is Bedford limestone.

Wood pile foundations for the building were completed in 1932, but erection of the superstructure was delayed by lack of financing. The first concrete for the superstructure was not placed until April 19, 1940.

Thielbar & Fugar, Chicago, are the architects; George A. Fuller Co. the contractor; and E. R. Burkhardt the construction superintendent.

BRIEF NEWS

DEEPENING of the Delaware River from the Navy Yard at Philadelphia to the Atlantic Ocean from 35 to 40 ft. has begun, following the House Appropriations Committee voting an emergency sum of $4,250,000 for the work. This work will make possible movement of the 45,000-ton battleships now being constructed at the Philadelphia yard. The appropriation will supplement the regular Delaware river channel appropriation of $750,000 already approved.

MILWAUKEE OFFICIALS, as a safeguard against sabotage, have added guards at night for the city's water plant, increased illumination at night and taken other precautions against possible damage to the city's water system. The department also plans to curtail visitors at the several plants and the reservoir.

STUDIES made by the planning survey unit of the Pennsylvania Department of Highways show that in 30 counties of that state 80 per cent of the highway traffic is carried on 30 per cent of the road mileage in those counties. In those particular counties there are 3,061 miles of primary highway, 1,786 miles of secondary highway and 8,598 miles of tertiary highway.

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Chicago Aerial Survey Photo

Gary sewage and garbage plant dedicated

The combined 40-mgd sewage and garbage disposal plant at Gary, Ind., was dedicated Sept. 26. The novel features, as noted in ENR Aug. 29, p. 273, aside from the grinding of the garbage and its digestion, are the activated sludge units with stationary tube diffusers, automatic control of pumping and low unit cost of the plant—$42,816 per 1-mgd capacity. The byproduct gas from sludge and garbage digestion is estimated to have an annual value of $13,000.

The building in the foreground houses the garbage grinders. The main structure at the left is the pump and blower house, back of which is the garage and the digesters. At the right in order front to back are the screen house and grit chamber, primary settlers, long aeration tanks, secondary settlers and sludge drying beds. Alvord, Burdick & Howson, of Chicago were the consulting engineers with W. W. Mathews, resident engineer (now superintendent) for the project. The Permanent Construction Co. and Strandberg & Spencer, Inc., of Chicago, were the principal contractors.

Big street improvement job studied at Columbus

Aimed to extend the civic center of Columbus, Ohio, to the northwest and to remove a "bottleneck" on Sandusky St., plans for a $900,000 street improvement project for the city have been prepared by Allan G. Slade, engineer of Franklin County, Ohio. With the plan proposed the work would include: transfer of the New York Central R.R. track from the present location to a point north of the existing overhead crossing of the Pennsylvania R.R. in Sandusky Street; construction of a new Sandusky St. bridge over the Scioto River; construction of two railroad underpasses, one on McKinley Ave. and the other on Sandusky St., and the construction of a new highway along the south bank of the Scioto River from Sandusky St. to Souder Ave.

To finance the work the Ohio State Highway Department, with the use of some federal funds, would pay $400,000; Franklin County $300,000; the city of Columbus $100,000, and the New York Central R.R. $100,000.

• • •

New York's water supply sources closed to visitors

Governor Lehman of New York state, on application of the administration of the city of New York, Sept. 28 issued an order closing to the public all streams, lakes, reservoirs and woodlands included in the sources of water supply for the city of New York. The order is effective until March 31, 1941.

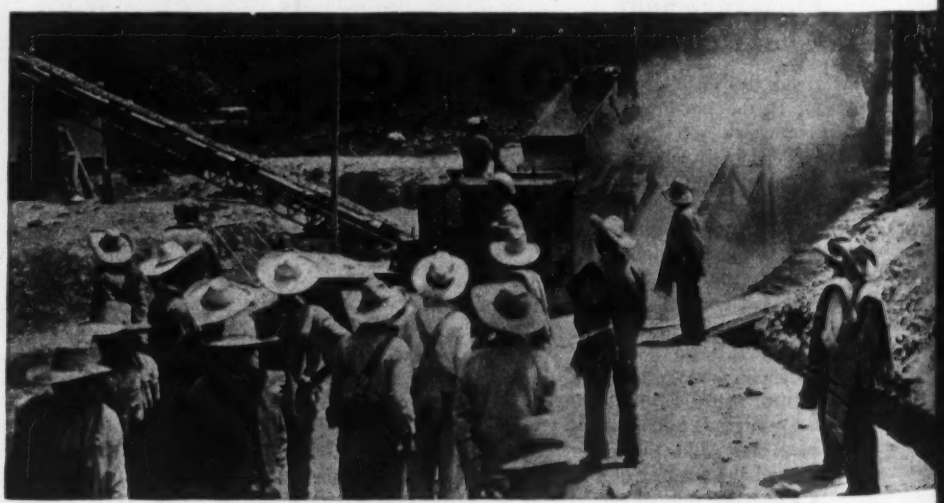
Reason for the action is to protect the city's water supply from possible sabotage during the "unusual conditions" which now prevail due to the war.

Work resumed on High Point power plant

Construction of the $6,492,600 hydroelectric plant being built by the city of High Point, N. C. on the Yadkin River has been resumed, following a favorable court decision, according to the Public Works Administration. Construction on the project had been suspended since June 30, 1939, when the superior court of Guilford and Yadkin counties enjoined further work in suits brought by Yadkin County and by a taxpayer and the Duke Power Co. Appeals of the court orders permitting construction again are to be heard by the North Carolina State Supreme Court the week of Nov. 26.

The project, begun Dec. 29, 1938, calls for an earth dam with a maximum height of 85 ft. and three 2,000-kw. power units. Part of the 460,000 acre-ft. of storage will be for flood control.

PROGRESS on the Inter-American highway, Central America's share of the Pan American highway, is shown by above map. Recent U. S. loans to Nicaragua and Costa Rica are expected to replace with paved routes many miles of what are now trails in those countries.



OPERATION of a modern gravel plant in Mexico attracts a large group of nearby residents. Most of the machinery was made in this country.

...ded by new U. S. loans

...tral America's job of constructing its 3,257-mi. share of the Pan American ...ay was speeded up last week when the Export-Import Bank, an RFC ...iary, loaned the Costa Rican government $4,600,000 for completing the ...les of the Inter-American Highway in that country (*ENR*, Sept. 26, 1940, ...). Added impetus to the work was the announcement by Jesse Jones, ...l Loan Administrator, that this loan was but one of a series to be made ...n American countries in order to aid them in meeting the financial and ...nic shock of war. Costa Rica's loan follows a recent $2,500,000 loan by ...port-Import Bank to Nicaragua for highways. It also follows aid by the ...Public Roads Administration during the past few years on the construction ...dges in Panama, Honduras and Guatemala (*ENR*, July 9, 1936, p. 65).

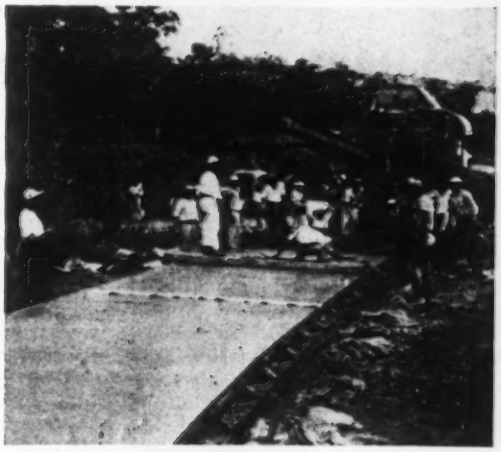
...route to be improved in Costa Rica extends from San Jose, that nation's ...l. to the Panama border, where it will connect with a road leading to the ...a Canal.

...he 3,257 miles of the Pan American Highway in Central America 1,165 ... as of July 1, have already been paved, 639 miles are all weather con...on, 1,804 miles are serviceable in dry weather only, and 822 miles exist ...l form only.

...ico already has 850 miles of the 1,712 miles in that country paved, ...gh a great deal of work remains to be done to provide a first-class high...rom Mexico City to the Guatemalan border. The 306 miles across ...mala is an all-weather road, but none of the road in that country has ...aved as yet.

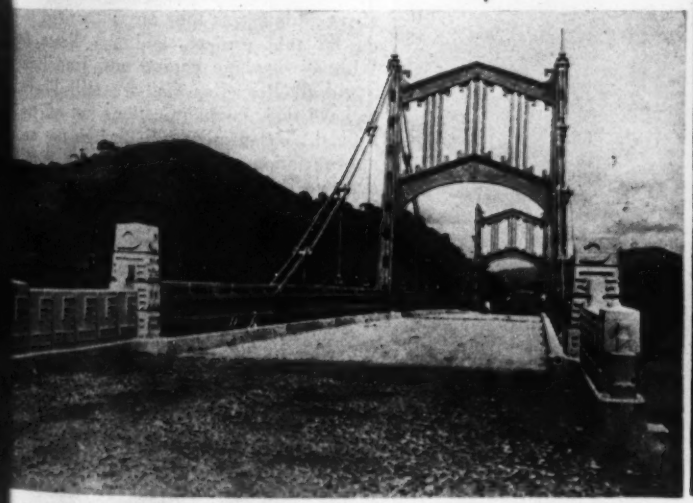
...first 145 miles of the route's 181 miles in El Salvador is an all-year road ...e remainder is open to travel in dry weather, except the last 10 miles ... reaching the border of Honduras. Transit across the 90 miles in ...ras presents no particular difficulty.

...nge of location to avoid competition between the highway and the gov...nt-owned Pacific R.R. has delayed work in Nicaragua, but the $2,500,000 ...rom the Export-Import Bank is expected to make rapid advancement ...le. 100 miles of that country's 245-mile share being already under con...on. Of the 356 miles in Costa Rica 280 miles remains unimproved and ...of it is not surveyed. Some heavy work remains in Panama between the ...Rican border and the town of David, but from that town to the Canal ...n excellent road exists. Extension of the route from the Canal Zone to ...lumbian border is not expected for many years.



PAVING in Panama follows U. S. practices. This slab is being constructed in 9-ft. widths and in panel lengths of from 50 to 60 ft.

CONSTRUCTION in Costa Rica calls for crossing difficult terrain. Here the road is on a hillside bench.



...l of the larger bridges already built is this suspension span, the Tamasulapa Bridge ...emala. The architecture is based on Mayan precedents.

Sabotage precautions studied by New England Water Works group

Longley, chief of A.E.F. water service, as principal speaker before association's largest meeting, tells of safeguards during last war.

Waterworks men got first-hand information on sabotage precautions and learned about water supply problems of the A.E.F. in the last World War at the 59th convention of the New England Water Works Association in New York City on Sept. 24-27. F. F. Longley, vice president of the Lock Joint Pipe Co. and chief of water service in the A.E.F., was the principal speaker at this session, which proved to be the highlight of the largest convention ever held by the association. Registration totaled 730.

A new and heavy responsibility rests upon waterworks men, cautioned Longley. He urged that study be given to what needs to be done in time of war or threat of war to safeguard supplies for civil populations, and to make provision for water of suitable quality and quantity for industrial and army uses. An outline was given of water requirements for camps and combatant zones, supplemented by a description of army procedure in the organization and methods of water procurement.

Canadian systems protected

Norman J. Howard, director of laboratories, Toronto, Ont., and president of the American Water Works Association, stated that Canadian waterworks adopted stringent precautionary measures a year ago, including the employment of guards. At Toronto, where the cost of the latter for six months totaled $180,000, the guards have been abandoned in favor of other protective means.

Public services in England have not suffered greatly from bombing, according to a communication received by the association from John Bowman, city water engineer of Edinburgh, Scotland, and president of the British Institution of Water Engineers. Bowman said, in part, "The public services are now called upon to face conditions of extreme warfare. From the results so far achieved by the enemy we may view the future with equanimity. Even where the attacks have been greatest the public services have functioned and civil life has been almost on normal lines."

The association adopted a resolution sponsored by E. Sherman Chase, consulting engineer, Boston, which urged that municipal waterworks budgets for the coming year provide funds for protective measures in view of sabotage possibilities.

Exhibits at the convention established a new record in number and space occupied, according to Jay Herman Smith, chairman of exhibits for the Water and Sewage Works Manufacturers' Association. Smith quoted the following statistics—65 exhibitors, representing 30 percent increase, and 8,000 sq.ft. of area occupied, a 63 percent increase.

Oldtimers at conventions were pleasantly surprised to see, after many years of absence, an exhibit of wood stave pipe, available in sizes from 2 to 180 in. in diameter. C. D. Kelsey, who represented the Continental Pipe Mfg. Co. of New York at this exhibit, stated that the small-diameter pipe was finding favor for water distribution and sewer service in the West.

Officers elected for the coming year were Leland G. Carlton, water registrar at Springfield, Mass., president, and Francis H. Kingsbury, Massachusetts State Dept. of Health, and Harold L. Brigham, superintendent of the Marlborough, Mass., water and sewerage commission, vice presidents. Abel Reynolds, treasurer of the N. E. Water, Light & Power Associates, Providence, R. I., will continue as the association's treasurer, and Frank J. Gifford as secretary.

Abstracts from papers given at the convention will be published in the technical section of next week's issue.

New waterworks president

Leland G. Carlton, new president of the New England Water Works Association, is water registrar at Springfield, Mass.

WASHINGTON HIGHLIGHTS

EVIDENCE in the change of Congressional temper since the economy wave of last winter is seen in the pending supplemental civil appropriation, where $20,472,000 is appropriated for three buildings in the District of Columbia which were turned down early this year —a $6,400,000 federal office building, a $3,900,000 heating plant, and a $9,850,000 general accounting office building. The bill also includes $80,000,000 for the start of an airport program (*ENR* Sept. 26, 1940, p. 386), $3,850,000 to accelerate work on the Bonneville transmission system, $2,500,000 to complete the Marshall Ford Dam in Texas, and an item of $8,127,000, most of which is for a 40-ft. channel in the Delaware River from the ocean to the Philadelphia navy yard and a breakwater to protect naval anchorages in Los Angeles harbor.

TWO DAYS after the President had signed the bill which appropriated $100,000,000 for defense housing to be administered by the Army and Navy, these agencies had allocated all but $660,000 of it to 110 projects which will provide 27,240 dwelling units. Meanwhile, the Senate is still considering a bill authorizing the Federal Works Agency to spend $150,000,000 on housing for defense workers, and the President has submitted a request to Congress for an appropriation of this amount.

ADDITIONAL local flood protection at East Hartford, Conn. would be provided under a bill, increasing the authorized magnitude of the project by $1,640,000, which has been favorably reported by the Senate committee. Because of unanticipated difficulties, the Army engineers have spent about as much as they are authorized to do on this project, and the Pratt & Whitney airplane engine and Hamilton Standard Propellor Co. are still likely to have their communications cut off by a flood. The present bill, though not an appropriation, would permit the engineers to shift money from other projects to this one.

ENGINEERING graduates between the ages of 20 and 27 are eligible to take the twelve-week courses in air navigation the Army is offering for training navigators for big bombers. Over the next 14 months, 850 men are to be trained and will be available for assignment to bomber crews. The courses will be given, under a contract arrangement, by the Pan-American Airways system at its Miami training school. Applications should be sent to the Chief of the Air Corps, Munitions Building, Washington.

Construction men disagree with Harrison on labor supply

List of skilled tradesmen considered important to defense program does not include construction workers

No one knows whether there is going to be a shortage of construction labor as a result of the defense program. A survey made by the U. S. Employment Service last April is now far out of date. No estimate has been made of peak construction employment to be engendered by defense, W. W. Harrison, construction coordinator for the defense commission, believing that little purpose is served by detailed estimates of future needs, and that situations will have to be met as they arise.

In a general way, Harrison believes that some local shortages in areas where jobs are concentrated are inevitable, but he sees no likelihood of an over-all shortage. So little, in fact, does the defense commission fear difficulty in this field that construction labor has been omitted from the list of some 500 skilled trades of defense importance on which the U. S. Employment Service is now keeping accurate and up to date records.

Shortages already in two cities

This view is not shared in some construction circles, where it is asserted that difficulty is already being experienced in some places—notably Seattle and Louisville—and that a nationwide shortage of competent construction labor may yet show itself.

These people point out that some trades, such as crane operators, are likely to be drawn into industrial employment. Some weeks ago the U. S. Civil Service initiated a move to recruit steelworkers for retraining as shipyard employees.

Government students of labor supply contend, however, that many reports of present shortages arise from the fact that employers, during the depression, became highly selective in their hiring, and that standards will have to be lowered in a period of comparative labor scarcity.

Figures from last survey

The April survey showed that of 5,100,000 workers listed in the offices of the U.S. Employment Service as seeking work, about 385,000 were skilled construction workers and about 70,500 were semi-skilled. Of the skilled workers, nearly half or 154,000 were carpenters. Cement and concrete finishers totalled 21,026; plumbers, gas fitters, and steam fitters, 35,135; cranemen, shovelmen, etc., 21,515.

A total of 628,556 were listed for work in the construction industry, of whom 254,856 were classified in general building construction, 226,201 as construction other than building, while 147,499 were assigned to special trade contractors.

Geographically, nearly half the men were in the Middle Atlantic and Great Lakes areas. New England, where there is much naval work and industrial expansion, had only 6 per cent, while the Pacific States, center of the airplane industry, had only 9.8 per cent.

Statistics subject to discount

All these statistics are subject to considerable discount. They were obtained simply by analysis of the files of the employment service and thus, in effect, take a man's word as to his qualifications. The figures now being maintained in the defense trades—not including construction—are based on individual reexaminations of each worker. Some contractors report that they have found the employment service's figures on construction labor quite misleading.

Watson nominated for A.G.C. presidency

The executive committee of of the Associated General Contractors of America Sept. 17 nominated M. W. Watson, Topeka, Kan., to succeed H. B. Zachry, Laredo, Tex., as the organization's president during 1941. D. W. Kimball, president of Owen-Ames-Kimball Co., Grand Rapids, Mich., was nominated vice-president to succeed Watson as vice-president. The election will be held at the 22nd annual convention at Houston, Feb. 17-19.

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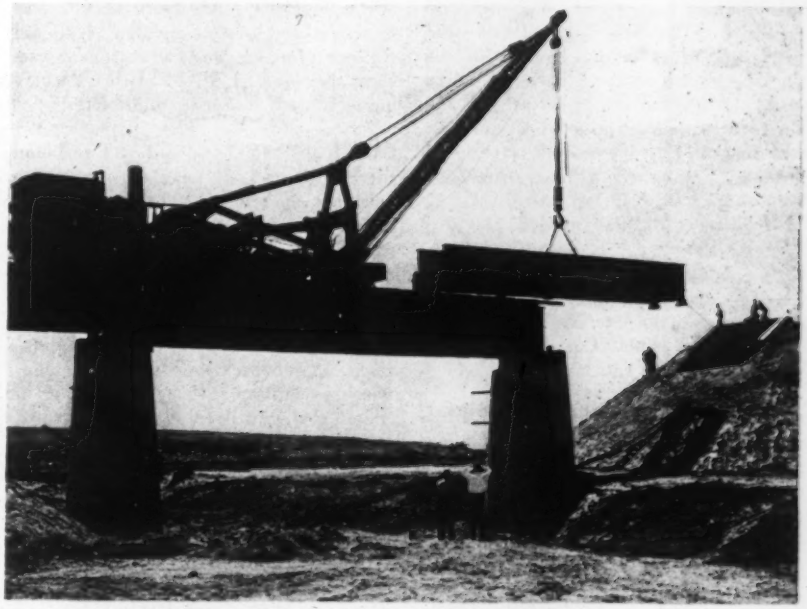
Seattle code revised to allow light floors

The Seattle, Wash., building code was amended last week to allow lighter floor construction for the first two stories of certain store buildings and light manufacturing establishments. The code was further modified to increase by 10 per cent the working limits allowed for steel. Also, welding, providing that it is done by persons licensed by the city after an examination, is now permitted in construction where only riveting originally was allowed.

Another change is the use of ceramic veneer on buildings without regard to height.



Bridge steel set for Santa Fe's new line

The American Bridge Co. is busy on its contract for the superstructure of the three bridges on the A.T. & S.F. Ry. relocation around the John Martin Dam reservoir at Caddoa, Colo. This is a view of erection operations at the Mud Creek bridge, which consists of two 60-ft. and one 80-ft. deck plate girder spans. Caddoa Creek and Rule Creek bridges will be constructed next according to the present program.

Western Contracting Corp., Sioux City, Ia. built the substructures and is doing the grading and drainage work on the new 20-mile line. The John Martin project, including the railroad relocation, is under the direction of the U. S. Army Engineers, Maj. James H. Stratton, district engineer.

MEN AND JOBS

J. E. BLANCHARD has been named general director of services with the reorganization of the public works department of the city of Montreal. Various divisions of the department will now be grouped into three sections, each of which will be headed by an assistant public works director directly responsible to Blanchard. The sewers and waterworks commission, which were abolished in the last Montreal bill passed by the Quebec legislature, will be taken into the special group known as the hydro-electric division under the supervision of H. A. Gibeau, assistant chief engineer of the city.

J. W. LEWIS, former city engineer of La Grange and Morehead City, N. C., is now supervisor of the Tri-county Electric Member Corp. at Goldsboro, N. C.

CHARLES B. PARSONS, superintendent of construction for the Veterans Administration, has been transferred to the Dallas, Texas Facility as utility officer. Parsons, after graduating with a civil engineering degree was employed for a number of years as construction engineer with the Austin Co., Cleveland; the Jones & Laughlin Steel Corp., Pittsburgh; and the Great Atlantic and Pacific Tea Co., New York. During the past eight years he has been with the U. S. Engineers on the Mississippi Levee work, the Quartermaster Corps, and the Veterans Administration on building construction. Parsons recently supervised the construction of a new $1,500,000 Veterans Facility at Fayetteville, N. C. (*ENR*, Sept. 28, 1939, p. 438).

C. W. LUNDOFF and Warren Bicknell, Cleveland building contractors, have retired and sold the interests of their firm, the Lundoff-Bicknell Co., to the Cleveland Construction Co.

R. A. RADFORD, formerly regional director of PWA, with headquarters at Omaha, Neb., has accepted appointment as a major in the Corps of Engineers and assigned to the office of the Assistant Secretary of War, Washington, D. C.

WM. W. MATHEWS, resident engineer during construction of the Gary (Ind.) combined sewage and garbage works, has been retained by the city to operate the plant. Mathews has handled the construction of many projects for Alvord, Burdick & Howson in the past several years.

HOWARD F. TECKWORTH, resident engineer inspector for PWA at Pinopolis Dam, S. C., and specialist on soil mechanics and foundation construction for the Santee-Cooper hydro-electric and navigation projects, has been appointed senior engineer on the PWA staff. Teckworth attended Cornell and Princeton universities and had charge of subway and tunnel work in New York City before coming to Santee-Cooper.

C. L. SAMPSON, Minneapolis, Minn., has been named chief engineer for Northwestern Bell Telephone Co. in Iowa, with headquarters at Des Moines, to succeed F. W. RULISON, who retired because of ill health. Sampson had several construction, maintenance and engineering assignments with the Bell Co. before coming to Des Moines.

CARROLL J. MCCARTY, junior traffic engineer with the division of highways of Illinois, will take a year's course of study in the Yale University Bureau of Highway Research.

A. W. GAINES, of Council Bluffs, has been selected county engineer of Harrison County, Iowa, succeeding THOMAS CHERRY, who resigned after a continuous period of seventeen years service.

JOHN W. PORTER has been named chief engineer for the Canadian National Railroad for the western region to succeed the late E. M. M. Hill. Porter's home is at Winnipeg, Manitoba.

CARL J. JOHNSON, civil engineer and land surveyor of Clear Lake, S. Dak., has been named a member of the engineering and architectural examiners board for the state of South Dakota. Other members of the board are: JAMES H. LAKE, civil engineer of Rapid City, S. Dak. and a member of the South Dakota State Highway Commission; H. B. BLODGETT, head of the civil engineering department at South Dakota State College, Brookings; WALTER J. DIXON, architect of Mitchell, S. Dak.; J. W. HENRY, architect of Aberdeen, S. Dak. Old members were: W. R. EDGINGTON, civil engineer of Mitchell and state engineer for the WPA in South Dakota; J. O. KAMMERMAN, dean of the electrical engineering department at the State School of Mines, Rapid City; C. A. TRIMMER, civil engineer of Madison; and GEORGE HUGILL, architect at Sioux Falls. Blodgett is secretary of the new group.

EMIL H. RAUSCH, JR., office engineer of the planning section of the Rock Island District, U. S. Engineers, and JOHN R. GIBBONS, field office engineer of the land section, Rock Island District, U. S. Engineers, have both been assigned to the Seattle, Wash. district. Other recent transfers from the Rock Island district are: OLIN GRAY, Hannibal, Mo. to the Caddoa, Colo., project; PHILIP L. DOOLEY, subsurveyman of Sabula, Iowa to Binghamton, N. Y.; CLIFFORD H. MCCOY, subsurveyman of Clinton, Iowa, to Binghamton, N. Y.; CHARLES E. CRAVEN, senior engineer aide of Rock Island, to Baltimore, Md.; BERT C. WILKAS, junior engineer of Rock Island, to the Denver office of the Bureau of Reclamation; EDWIN B. SIGLER, senior draftsman of Rock Island, to War Department, Rock Island Arsenal; HAROLD F. BLACKERT, draftsman of Moline, War Department, Rock Island Arsenal; RAYMOND F. OTTO, draftsman of Davenport, Iowa, War Department, Rock Island Arsenal; and GORDON A. BLAIR, subsurveyman of Rock Island, War Department, Rock Island Arsenal. Members transferred to the Quartermaster Corps, Proving Ground, Savanna, Ill. include: WILLIAM W. ANDERSON, subsurveyman of Clinton, Iowa; JOHN B. PETESCH, subsurveyman of Iowa City; RALPH C. ROGERS, subsurveyman of Cambridge, Ill.; ROBERT E. IHM, subsurveyman of Camanche, Iowa; ROBERT B. TEETS, surveyman of Milledgeville, Ill.; IRVING I. SAMUELSON, assistant engineering aide of Clinton, Iowa; and STEWART KUTTLER, junior engineer of Moline.

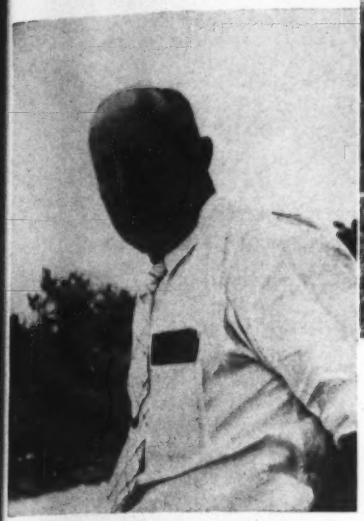
E. A. STAHOSKI, state field engineer in Wisconsin for the Work Projects Administration since 1935, has been appointed project consulting engineer of the Wisconsin National Guard. He will coordinate all national defense work in Wisconsin under the jurisdiction of the Adjutant General.

L. W. MAHONE, of the Iowa State College Engineering Extension Department, has been appointed supervisor of the Iowa Merit System Council to supervise the merit system. Mahone, who holds a bachelor's degree and a master's degree in civil engineering from Iowa State College, for the last ten years has been a member of the engineering extension staff of that college.

GEORGE H. BURNETTE, assistant chief engineer of the Pittsburgh and Lake Erie Railroad Co. since 1931, has begun new duties as president of the Cambria & Indiana R. R. Co. with headquarters at Philadelphia. Burnette graduated from Ohio Northern University in 1905 with a degree in civil engineering. Before joining the Pittsburgh and Lake Erie R. R., he worked with the Monongahela Ry. in various positions, including draftsman, chief draftsman, assistant engineer, engineer and chief engineer.

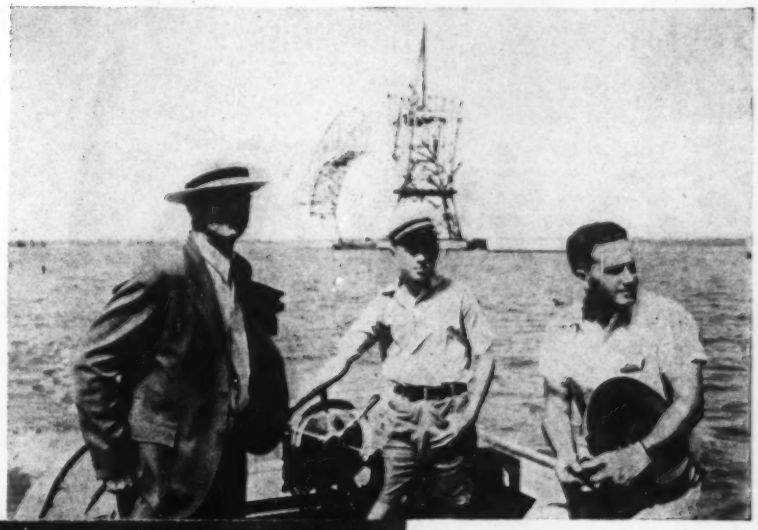
R. T. HAGLER has been elected superintendent of the water department of the city of Erin, Tenn.

Men at Work



Hell and high water broke loose around ED. MAIER, city engineer of Bridgeton, N. J., a few days before this picture was taken, heavy rains washing out two dams and flooding the city water plant. Prior to accepting the Bridgeton post ten years ago, Maier was an engineer with the Portland Cement Association.

Engineers playing an important part in the John Martin Dam work in Colorado include the above group. They are left to right: LIEUT. ALDEN K. SHIPLEY, U. S. Engineers, and REUBEN E. COLE, J. P. SHIRLEY, JR. and VERN MARSH of the contractor's organization.



Postman's holiday for R. D. McGILVRA (left), resident engineer for Ash-Howard-Needles and Tammen on six bridges on the Ocean Highway along the lower east shore of New Jersey, as he visits REGINALD ARCHIBALD (right), resident engineer for the J. E. Greiner Co. on the Ludlow Ferry Bridge over the Potomac fifty miles below Washington. The pilot is young JACK ARCHIBALD.

With Grand Coulee Dam nearing completion, the men who have had to do with its construction are in line for the credit which goes to the builders of world record structures. On the design and supervision side of the job there are four U. S. Bureau of Reclamation men who have been on the job so long and so constantly as to deserve special mention. All four of them were caught in this recent picture at the dam. They are, left to right, FRANK A. BANKS, supervising engineer; A. F. DARLAND, construction engineer; J. H. MINER, assistant supervising engineer; and B. A. HALL, chief inspector.

Col. F. C. Harrington dies; WPA administrator

Col. Francis C. Harrington, 53, since December, 1938 head of the Work Projects Administration, died Sept. 30 in a New London, Conn. hospital where he underwent an operation a week ago.

A graduate of West Point in 1909, Harrington continued his education by studying at the French School of War

Col. F. C. Harrington

Tactics in Paris. From 1909, when he was commissioned a second lieutenant, to 1938, when he was loaned by the U. S. Engineers to head the WPA, Col. Harrington had held a number of positions with the army engineers. This included work as an instructor in officers training camps, commanding the 215th Engineers, serving as a member of the A.E.F. headquarters in France, acting as assistant professor of mathematics at West Point, directing the army engineering school, and serving from 1924 to 1927 as assistant engineer of maintenance on the Panama Canal. His work for the WPA was characterized by able administration and fair and sensible decisions that won the respect of both friend and foe of the work-relief system.

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Pennsylvania Turnpike open to traffic

Without ceremony, the Pennsylvania Turnpike was opened to public use at one minute past midnight on Sept. 30. Tolls for passenger cars have been set at $1.50 for the 160-mile expresshighway between Irwin, near Pittsburgh, and Middlesex, near Harrisburg. Round trip rates are $2.25 for automobiles.

Truck tolls range from $3.00 to $10.00 depending on the weight and type of vehicle. For distances less than the entire route, auto and truck fares vary from about one cent per mile, to three to six cents per mile, respectively.

JOBS OF THE WEEK

AVIATION FACILITIES, Alaska.

Siems-Drake-Puget Sound Co., Seattle, Wash., was awarded $1,280,700 additional contracts by the Bureau of Yards & Docks, Navy Department, Washington, D. C., for work in Alaska. The project includes a hangar and magazines at the naval airbase at Sitka and additional work at Dutch Harbor and Kodiak naval airbases, including magazines and a gas system at Kodiak.

BELT PARKWAY, Brooklyn, N. Y.

B. Turecamo Contracting Co., Brooklyn, N. Y., will do the grading, drainage, and paving for the Belt Parkway from Guider Avenue to Plumb 3rd St., Brooklyn, for the Triborough Bridge Authority under terms of a $1,068,871 contract.

GAS STORAGE, Territory of Hawaii

Hawaiian Dredging Co. and Associates, Honolulu, was awarded a $1,766,700 contract for the grading, servicing and gas storage work at Kaneohe, Oahu. The same firm will also construct the aircraft storehouse, laundry, land plane hangars, parking area, seaplane ramps, and recreation building at naval air station at Pearl Harbor under terms of a $2,231,000 contract.

SUPPLY PIER, Norfolk, Va.

McLean Contracting Co., Baltimore, Md., got the job for constructing the supply pier and rehabilitating the existing piers and breakwater at submarine base for the Navy Dept., Washington, D. C. The $3,226,500 contract is on a cost-plus basis.

AIRPLANE ENGINE PLANT, River Rouge, Mich.

Ford Motor Co., Dearborn, Mich., is constructing by separate contracts a 2-story, 360x1,000-ft. building with 4-story wings to manufacture airplane engines. The work is estimated to cost $4,000,000 with $7,000,000 required for equipment. Griffels & Vallet, Detroit, Mich., are engineers for the work. American Bridge Co. will supply the structural steel.

AIRCRAFT PLANT, Niagara Falls, N. Y.

Austin Co., Cleveland, was awarded the contract for constructing 40x400x600-ft. aircraft plant on 58-acre site near the Niagara Falls airport for Bell Aircraft Corp., Buffalo. Estimated cost of the work with equipment is $1,000,000.

FACTORY, Indianapolis, Ind.

National Concrete Fireproofing Co., Cleveland, O., will construct a 350,000-sq. ft. factory addition for Allison Engineering Corp., Indianapolis, Ind. The work is estimated to cost $500,000.

ARMY CANTONMENT, Camp Ord, Calif.

J. F. Twaits Co. and Morrison-Knudsen Co., Los Angeles, were awarded the contract for constructing 300 buildings at Presidio of Monterey for the Constructing Quartermaster. Estimated cost of the work is $2,000,000. The same contractor received a $2,731,000 contract this month for temporary housing at the same site.

AMMUNITION DEPOT, Hawthorne, Nev.

W. P. Neil Co., Los Angeles, Calif., was awarded a $2,126,000 contract for constructing the buildings, roads, railroad, street lighting, and fire protection system at the naval ammunition depot at Hawthorne, Nev.

BRIDGES AND ROADS, Virginia

George F. Haselwood Co., Cumberland, Md., was awarded a $1,137,035 contract for constructing an overpass, bridges over the Shenandoah River and for paving with macadam 2.3 mi. of Route 3 in Warren County in Virginia. This is largest contract of its kind ever let by the Virginia highway department.

PLANT, Minneapolis, Minn.

G. F. Cook Construction Co., Minneapolis, Minn., was awarded a contract by the Northern Pump Co., Minneapolis, for constructing a plant to manufacture gun mounts and other machinery for the Navy. About $750,000 is to be spent for construction and $2,000,000 for equipment. Pesek & Shifflet, Minneapolis, are architects for the work.

CANTONMENT, Fort Lewis, Wash.

Far West Construction Co., Seattle, Wash., bid low at $4,075,032 for constructing a cantonment at Fort Lewis.

HOUSING PROJECT, Newport News, Va.

V. P. Loftis, Charlotte, N. C., got a $1,084,000 contract for constructing 352 residential units in the Marshall Courts project. The Newport News Housing Authority is doing the work, which is planned for housing defense workers employed at the Newport News shipyards. It is one of the first four jobs to house defense workers for which the USHA provided loans.

NOTE—Additional bidding and contract news on over 600 projects, large and small, appear in the Construction News Section beginning on page 14.

Aerial bombardment protection studied by several government agencies

War Department makes recommendations for minimum protection for munitions plants. Explosive forces under investigation

Although publicity is deprecated, several government agencies are investigating the best means of protecting factories and men from aerial bombardment. These studies all take their start from the work done by the British Air Raid Precautions, which has issued a number of books and pamphlets on the subject.

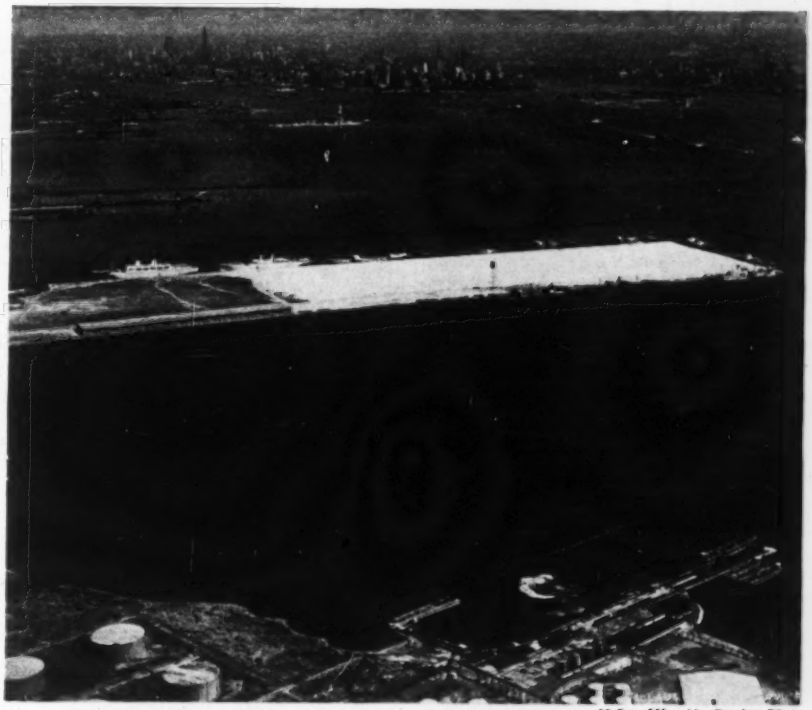
It is planned in the near future to ask the state governments to organize local agencies somewhat similar to ARP, and information obtained by the present studies will be released through these state bodies. The War Department now has in preparation several pamphlets, for the use of the states, outlining means for protection against bombs, gas, and incendiaries.

It is unlikely that any elaborate and expensive protective measures will be recommended. The Army's position has been and is that, because of geographical isolation, no part of this country is likely to be subjected to sustained bombardment of the European type. Last week however. the planning branch of the War Department issued a set of recommendations for minimum protection of munitions plants against bombardment. Major recommendations for immediate action are provision for blackout and intelligent location. Blackout can be achieved most simply in the case of the new windowless air-conditioned plants, such as the new Allison factory. In other types of plant opaque shutters must be provided over all windows, and provision made for ventilation meanwhile. Outside lights should have means to cover them with blue shades, and white lines should be painted on walks and drives. It is recommended that concrete buildings, easily visible from the air, be painted some dark color to blend with the surroundings.

As regards actual protection against bursting bombs, no other present action is recommended but it is urged that provision be made in plans for future construction of underground shelters for workmen and for storage of vital machines and parts.

How these future shelters should be constructed is now under study. The Army engineers are formulating designs, based on European and ARP experience, have built some experimental shelters, and are now engaged in blowing them to pieces to see what happens. The National Academy of Sciences, at the request of the Army, is doing some basic research on the forces involved in bomb demolition. And the Bureau of Standards is understood to have some confidential projects under way along this line. An over-enthusiastic publicity release last week gave the impression that the U.S. Housing Authority is making such studies, but this is not the case.

Most "bomb-proof" shelters are of course not bomb-proof but splinter proof. Their design at present is largely empirical; it is known that most splinters will be stopped by 30 in. of earth, 12 in. of reinforced concrete, or 1–1½ in. of steel. Shelters should be low or underground because of the tendency of shell splinters to rise. Beyond such points, design problems are matters of ventilation, prevention of condensation and the like. It is possible to build a shelter proof against a direct bomb hit but it would be a very massive structure.



McLaughlin Air Service Photo

Where world's largest drydock may be built

Included in the third supplemental defense appropriation bill, recently approved by the appropriations committee of the House, are funds for the Navy to start construction at New York of a supply depot and of a drydock large enough to accommodate the 45,000-ton battleships now being built.

The committee recommended an appropriation of $3,500,000 to cover purchase and development of the Bayonne, N. J., Municipal Terminal in New York Harbor for a supply depot and authorized contractual authority for an additional $1,500,000 for the depot. Also approved was an appropriation of $3,000,000 to start work on a drydock at New York and contractual authorization of $7,000,000 to complete the drydock. A site for the dock has not been selected definitely, but it is expected that it will be built as an extension of the Bayonne terminal shown on the accompanying map, which is taken from a report to the Port of New York Authority prepared by Frederic R. Harris.

The Bayonne terminal was built in 1938 at a cost of about $4,300,000, of which $2,530,000 was covered by bonds issued by the city and the remainder was a federal grant. It is understood that the city will sell the terminal to the federal government for the amount of its bond issue.

OBITUARY

LIEUT. COL. WILLIAM A. SNOW, 46, with the U. S. Engineers for many years and recently assigned to the First Armored Corps at Fort Knox, Ky., died in Washington, D. C., Sept. 25. After his graduation from the Command and General Staff School, Fort Leavenworth, Kan., in June, 1936, he went to Washington to serve as a member of the Board of Engineers for Rivers and Harbors until 1937, when he became chief of the river and harbor section. Later he was made executive assistant to the Chief of Engineers, holding that appointment until his assignment to the First Armored Corps.

JAMES C. MCDONALD, 51, vice president of the William P. McDonald Construction Co., New York City, died Sept. 25 in New York.

O E. POISSANT, 54, civil engineer, died in Montreal Sept. 17. Following his graduation from the Ecole Polytechnique of Montreal in 1913, he joined the technical staff of the city of Montreal to serve that city for 27 years.

WILLIAM H. GILL, 74, retired civil engineer formerly employed by the Pennsylvania R.R., died Sept. 23 in Indianapolis, Ind.

JOHN KOCH, 71, former superintendent of distribution for the Milwaukee water department, died Sept. 1 in that city. Koch joined the Milwaukee department in 1892, retiring two years ago on pension after 46 years of service with the city.

CHARLES V. SEASTONE, 68, president of the Madison, Wis., metropolitan sewerage commission, died in that city Sept. 26.

CHARLES M. ESTABROOK, 62, of Chicago and lieutenant colonel in the Engineer Reserve Corps, died at Rochester, Minn., Sept. 27. Estabrook, following work in New York City on the construction of the Broadway subway and the Hudson tubes, had been employed as engineer by the Public Works Administration.

LEWIS NIXON, 79, at one time superintendent of the Cramp shipyards at Philadelphia and former superintendent of public works of New York state, died Sept. 23 at Long Branch. Lately he had headed the Nixon Nitration Works, Nixon, N. J.

ELLIS R. DUTTON, 81, for many years assistant city engineer at Minneapolis, died recently. Following his education at Coe College, Cedar Rapids, Iowa, he worked with the Chicago, Milwaukee & St. Paul Ry. on location.

J. C. HINCKLEY, 58, superintendent of the Geauga County, Ohio, highway department for 11 years, died last week at Chardon, Ohio. Hinckley had worked in early life with the Canadian Pacific on the Hudson Bay branch north of Sudbury and on highway construction of the southeastern United States before going to Chardon.

WILLIAM H. BENTON, 75, construction inspector in Cleveland when Peter Witt was traction commissioner for that city, died Sept. 25.

FITZHUGH KNOX, 73, Atlanta, Ga., builder and head of the Fitzhugh Knox & Sons firm, died Sept. 27.

WILLIAM H. MORGAN, 67, civil engineer with the firm of Sheppard, Morgan & Schwaab, died at his home in Alton, Ill., Sept. 26. Morgan had engaged largely in drainage work in Illinois, Missouri and Arkansas.

CONTRACTS AND CAPITAL

PRIVATE and public awards for defense projects combine to bring engineering construction volume to $94,181,000 for the week. This is 75 per cent higher than in the corresponding 1939 week, but 8 per cent below the high volume of a week ago.

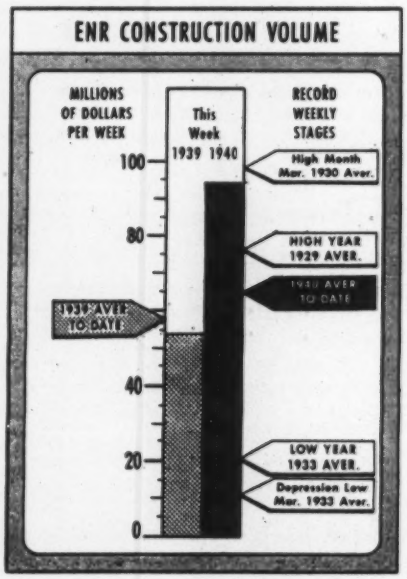
Private construction tops the 1939 week by 86 per cent as a result of the increased volume of industrial building, and is 12 per cent higher than a week ago. Public awards exceed last year by 69 per cent, but are 16 per cent under last week.

The current week's awards bring 1940 construction to $2,597,154,000, a gain of 12 per cent over the $2,319,180,000 reported for the 40-week period a year ago. Private construction for the period is 23 per cent ahead of last year, and a 174 per cent increase in federal work is responsible for the 8 per cent gain in public awards.

Industrial building volume reached its second highest week of the year due to seven large awards in seven states totaling $19,000,000. In addition to industrial buildings, bridges, commercial buildings, streets and roads and unclassified top a week ago; and waterworks, bridges, public buildings, streets and roads, and unclassified construction are higher than a year ago.

Federal appropriations for defense housing projects add $329,520,000 to this week's new construction capital, and with the $12,966,000 in state and municipal bond sales and $5,086,000 in corporate security issues, bring the total for the week to $347,572,000.

The week's construction capital total boosts 1940 financing to $3,195,039,000, an increase of 46 per cent over the $2,184,938,000 reported for the 40-week period last year.



CONTRACTS

(Thousands of dollars)

	Week Ending Oct. 5 1939	Sept. 26 1940	Oct. 3 1940
Federal	$15,660	$42,020	$37,436
State & Municipal	21,085	31,664	24,824
Total public	$36,745	$73,684	$62,260
Total private	17,183	28,493	31,921
TOTALS	$53,928	$102,177	$94,181
Cumulative 1940 (40 weeks)			$2,597,154
1939 (40 weeks)			$2,319,180

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial building, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1939 40 Wks.	1940 40 Wks.
NON-FEDERAL	$1,056,910	$1,192,292
Corp. Securities	183,846	206,619
State & Mun.	416,341	385,613
R.E.A. loans	89,445	40,000
U.S.H.A. loans	172,693	180,465
R.F.C. loans	4,315	195,595
Fed. Aid-Hwy	190,000	184,000
FEDERAL	1,128,028	2,002,747
TOTAL CAPITAL	$2,184,938	$3,195,039

FHA MORTGAGES

	Week Ending Sept. 30 1939	Sept. 21 1940	Sept. 28 1940
Selected for appraisal	$24,916	$29,270	$28,797*
Cumulative 1940 (39 weeks)			$985,721*
1939 (39 weeks)			$876,281

* Subject to revision.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Sept., '40	244.13	117.35
Building Cost	Sept., '40	203.13	109.83
Volume	Aug., '40	281	123

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

PINOPOLIS POWER PLANT SOUTH CAROLINA

OWNER: South Carolina Public Service Authority, Charleston, S. C.; Harza Engineering Co., Charleston, engineers.

PROJECT: Construction of superstructure, walls and roof, lock house, elevator house, utilities building, and furnishing and installing mechanical equipment for hydro-electric power-house near Pinopolis, S. C. Portion of Santee-Cooper project. Power house is 49 by 60 ft.

CONDITIONS: Contractor to furnish all material and complete work in 180 days. Rail and highway transportation facilities available. Wage rates specified are: skilled labor, $1.00 to $1.50 per hr.; semi-skilled, 50c. to $1.00; and common labor, 50c. to $1.00. Common labor on heavy construction receives 40c. per hr.

BIDS: Two bids were received on Schedule 1 September 6, 1940, the contract low of $360,730, and $403,411. Engineer's estimate $296,719. Two bids were also opened at the same time for Schedule 2, the contract price of $72,305, and $75,263. Engineer's estimate, $79,350.

Schedule 1—Superstructure walls, roof and misc. structures

LIST OF BIDDERS:

1. Central Engineering Co., Davenport, Iowa (contract) $360,730
2. A. H. Guion & Co., Charlotte, N. C. 403,411

Item	Quan	Unit Prices (1)	(2)
1 Concrete	3,900 c.y.	$36.32	$47.80
2 Forms, type 1, tongue and groove	42,000 s.f.	.63	.68
3 Forms, type 2, lined	15,000 s.f.	.63	.72
4 Forms, type 3, lined and rubbed	54,000 s.f.	.70	.78
5 Forms, type 4, absorptive	50,000 s.f.	.73	.81
6 Reinforcing steel	380 ton	131.00	98.00
7. Roof, gypsum slab	230 sq.	53.60	54.30
8. Roofing, tar and gravel	230 sq.	20.40	17.10
9. Roofing, tar and felt, incl. tile surface	105 sq.	54.75	56.90
10. Roof, conc. slab, tar and felt, with slate	28 sq.	100.00	107.30
11. Aluminum spandrels	L.S.	2,350.00	3,790.00
12. Glass blocks	4,200 s. f.	2.00	1.65
13. Rigid steel conduit	11,000 lb.	.35	.16
14. Lighting panelboard boxes	L.S.	250.00	750.00
15. Lighting fixture, type F	6 ea.	35.00	40.00
16. Lighting fixture, type N	5 ea.	25.00	32.00
17. Miscellaneous ironwork	2 ton	250.00	175.00
18. Misc. galv. metalwork	100 lb.	.30	.22
19. Seals	1,800 lb.	.65	.52
20. Copper ground	250 lb.	.50	.48
21. Fndn. excav. and backfill	L.S.	1,300.00	650.00
22. Rough plumbing and drainage piping	L.S.	9,102.50	10,562.00
23. Elevator	1 ea.	5,011.00	5,000.00
24. Structural steel	11,000 lb.	.10	.10
25. Roofing; price reduction, Item 9 for slate instead of tile	100 sq.	(3.75)	(2.16)

Schedule 2—Mechanical Equipment

LIST OF BIDDERS:

1. C. M. Guest & Sons, Anderson, S. C. (contract) $72,305
2. Poe Piping & Heating Co., Greenville, S. C. 75,263

Item	Quan.	Unit Prices (1)	(2)
1. Raw water pump, 150 gpm	1 ea.	$395.00	$388.00
2. Raw water fire pump, 500 gpm	1 ea.	709.00	600.00
3. Oil pump in pow. pl.—75 gpm	2 ea.	525.00	524.00
4. Oil pump, util. bldg.— 75 gpm	1 ea.	525.00	554.00
5. D. T. unwatering pump, 2,500 gpm.	2 ea.	1,550.00	1,728.00
6. Sta. serv. sump pump, 500 gpm	1 ea.	1,025.00	1,103.00
7. Air compressor, 115 cfm	1 ea.	2,295.00	2,335.00
8. Aux. air compressor, 108 cfm	1 ea.	1,483.00	1,489.00
9. Non-portable oil purifier, 900 gphr.	1 ea.	5,476.00	6,385.00
10. Lubr. oil purifier, 300 gphr	1 ea.	2,750.00	2,967.00
11. Piping, valves, fitting and tanks	L.S.	46,866.00	47,000.00
12. Fans and ducts	L.S.	3,914.00	5,200.00
13. Tools	L.S.	2,717.00	2,740.00

Unit prices used in event of additions or deductions

Item	Quan.	Unit Prices (1)	(2)
1. Std. wt. black steel pipe	1 lb.	$0.07	$0.07
2. Std. wt. galv. steel pipe	1 lb.	.09	.08
3. Std. wt. blk. wr. iron pipe	1 lb.	.12	.14
4. Gate valves, 125# scd. bras, ¼ to 3 in.	1 lb.	1.90	2.60
5. Globe valves, 125# scd. brass, 1 to 2½-in.	1 lb.	1.70	2.80
6. Gate valves, 125# OS&Y IBBM, 2½ to 6-in.	1 lb.	3.70	3.75
7. Globe valves, 125# OS&Y IBBM, 2½ to 6-in.	1 lb.	2.50	3.60
8. Gate, 125# IBBM non-rising stem, 4-in. up	1 lb.	2.60	3.20
9. Check valves, 125# brass, ¼ to 2½-in.	1 lb.	1.90	2.60
10. Check valves, 125# IBBM, 3 to 8-in.	1 lb.	2.05	3.00
11. Copper tubing, class K	1 lb.	.27	.40
12. Hose valves, 1½ to 3-in	1 lb.	1.25	2.00

BRIDGE SUBSTRUCTURE DELAWARE

OWNER: U.S. Engineer Office, Philadelphia, Pa.; Major H. B. Vaughan, district engineer.

PROJECT: Constructing concrete substructure for high-level highway bridge over Delaware and Chesapeake Canal at St. Georges, Del. The 540-ft. steel span to be flanked by steel plate girder approaches. Roadway to be two 23-ft. reinforced concrete lanes. Concrete sidewalk to be 4-ft. wide.

CONDITIONS: Contractor to furnish all materials and complete work in 210 calendar days. Prevailing wages for all trades to be paid. Common labor rate stated to be 50c. per hr. Canal and highway transportation facilities available.

BIDS: Seventeen bids were received May 27, 1940, ranging from the contract low of $931,554 to $1,350,122. Awarded June 3, 1940. Engineer's estimate, $1,170,121.

LIST OF BIDDERS:

1. Penker Constr. Co., Cincinnati, Ohio (contract) $931,554
2. Potts & Callahan Contract'g. Corp., Baltimore, Md. 933,894
3. Fehlhaber Pile Co., Inc., New York, N.Y. 936,066
4. The Duffy Constr. Co., New York, N.Y. 945,216
5. Merritt-Chapman & Scott Corp., New York, N. Y. 997,469
6. T. A. Loving & Co., Goldsboro, N.C. 998,894
7. McLean Contracting Co., Baltimore, Md. 1,049,475
8. Brann & Stuart Co., Philadelphia, Pa. 1,068,166
9. Chas. H. Tompkins Co., Washington, D.C. 1,077,700
10. Kaufman Constr. Co., Philadelphia, Pa. 1,106,198
11. P. J. Carlin Constr. Co., New York, N.Y. 1,110,738
12. P. T. Cox Constr. Co., New York, N.Y. 1,116,560
13. Golder Constr. Co., Philadelphia, Pa. 1,138,292
14. Franklin Contracting Co., Newark, N.J. 1,138,331
15. The Arundel Corp., Baltimore, Md. 1,248,586
16. Dravo Corporation, Pittsburgh, Pa. 1,277,598
17. Francis A. Canuso and Son, Philadelphia, Pa. 1,350,122

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Conc. in bases, piers 1N and 1S	8,920 c. y.	$17.90	$19.00	$19.50
2. Same, piers 2N–8N, and 2S–8S	6,130 c. y.	19.32	16.50	22.00
3. Same, piers 9N–20N, and 8S–21S	2,970 c. y.	11.00	17.50	27.80
4. Conc. in pier shafts	16,800 c. y.	11.25	14.00	13.70
5. Conc., abut. and ret. wall	1,035 c. y.	13.15	17.00	20.00
6. Granite masonry, piers 1N and 1S	3,610 s. f.	4.53	2.50	2.50
7. Reinforcing steel	1,900,000 lb.	.045	.04	.042
8. St. sheet piling, left in place	33,500 s. f.	3.00	1.00	.47
9. St. bearing piles, piers 1N and 1S	28,000 l.f.	3.16	4.75	3.30
10. Timber piles, piers 2N–8N, and 2S, 3S	70,000 l. f.	.475	.45	.35
11. Cast-in-place conc. piles, piers 9N–15N; 4S–11S and S abutmt	30,000 l. f.	1.96	1.60	1.50
12. Add'l. cast-in-pl. conc. piles	10,000 l. f.	1.96	1.75	1.55
13. 4-in. steel pipe for util. conduits at piers 2N, 2S and 5S	1,540 l. f.	.84	1.50	1.50
14. 48-in. rein. conc. culv. pipe	256 l. f.	45.30	19.00	10.00
15. Soil bearing load test on 16 s. f. areas	6 ea.	400.00	300.00	500.00
16. Load test for timber or conc. piles	2 ea.	200.00	500.00	500.00

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, Manager *SCOTT McLEOD, Statistician*
(Daily service also available—Write for details)

Location of ENR Correspondents

Symbols and Abbreviations Include:

† Federal Government
* Project of $500,000 or over
ENR Engineering News-Record
CD Construction Daily

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Latin America
Bridges, Grade Cross'gs	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads): BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR); LOW BIDDERS: All low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published. CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

WATER SUPPLY

PROPOSED WORK

Ariz., Williams—Bond election in October WW sys. exten. $55,000.

Colo., Denver—Denver Water Bd., G. F. Hughes, secy., water chute at Cub Creek and wood stave main from Platte Canon Reservoir. $26,475.

Fla., Riviera—Water tower, Singers Island. $15,000.

Ill., Charleston—P. Stoner, mayor, defeated bonds WW imprv. project, artificial lake, $130,000. CD 8/28—ENR 9/5.

Ind., Dugger—WW imprvs. $50,000 or more with equip.

Kan., Osage City—Dam and reservoir at Salt Creek and piping for increasing city water supply. $20,000. CD 8/6—ENR 8/8.

†Massachusetts—U. S. Coast Guard, Treas. Dpt., Wash., D. C., bids soon, 30,000 gal. steel tower with tank, at Maritime Training Station, Gallups Island.

Minn., Lyle—C. Dryland, town clk., surveys WW sys.

Mo., Kansas City—Water Dist. 7, c/o V. E. Phillips, Dirks Bldg., placing water line on west side of Wornall Rd. to State Line and from 79 to 89 Sts. $55,000. W. B. Rollins & Co., Railway Exch. Bldg., engrs. CD 9/25—ENR 9/5.

O., Brewster—$64,000 bond election in November, imprv., exten. WW sys.

O., Salineville—$15,000 bond election Nov. 5, enlargement, modernization WW sys.

S. D., Deadwood—R. P. Peterson, city aud., preliminary survey exten. WW sys. $20,000.

Tex., Omaha—R. Horn, mayor, WW sys. 100,000 gal. elevated steel tank, 75 ft. tower, deep well distr. sys. fire hydrants, etc. $40,000. Freese & Nichols, Capps Bldg., Fort Worth, engrs. CD 1/31—ENR 2/8.

Tex., Stephenville—J. W. Clement, mayor, 1 m.g.p.d. water softening plant. $25,000. Freese & Nichols, Capps Bldg., Fort Worth, engrs. CD 2/5—ENR 2/7.

Wash., Seattle—C.i. watermains, area between W. Myrtle and Barton Sts., 30 and 35 Aves., hydrants, gate valves. $74,000. C. L. Wartelle, County-City Bldg., engr.

Wis., Brooklyn—H. Snyder, village clk., WW sys. $72,000. Applied for WPA funds. General Eng. Co., Portage, engrs.

Wis., Omro—S. Weingarten, village clk., WW sys. $125,000. J. Donohue Eng. Co., Sheboygan, engrs.

Wis., Webster—P. Bertison, village clk., WW sys. $90,000. General Eng. Co., Portage, engrs.

Que., St. Jerome du Lac—Exten. WW sys., steel mains, etc. $15,000. L. Plourde, Town Hall, engr.

BIDS ASKED

Bids Asked October 8

N. Y., South Fallsburg—Town of Fallsburg, at office Town Clerk, Community Center Bldg., South Fallsburg, 206 water meters for WW. M. Michaels, superv.; adv. ENR 10/3.

Bids Asked October 11

D. C., Wash.—Dist. Comrs., District Bldg., c.i. or steel watermain, connections, from Anacostia Pump. Station, 18 St. and Minnesota Ave. S. E. $30,000.

Tenn., Knoxville—Tennessee Valley Auth., Knoxville, 11,000 ft. 14 in. water pipe line for Field Plant 1, Maury Co. near Columbia; adv. ENR 10/3.

Wis., Black Creek—Test well, sewer and water mains, c.i. pipe and fittings, hydrants and valves, copper service materials, elevated steel tank and tower. A. E. McMahon Eng. Co., Menasha, eng. CD 9/10—ENR 9/12.

Bids Asked October 15

Tex., Wichita Falls—J. B. Miller, city mgr., WW imprvs. $50,000. J. E. Ward, Harvey Snider Bldg., engr. CD 9/23—ENR 9/26.

Bids Asked October 16

Ind., Princeton—Bd. P. Wks., T. C. Fowler, chn., City Hall, WW imprvs., developing 2,000 gal. per hr. water supply (wells). $425,000. L. S. Finch, 276 Century Bldg., Indianapolis, consult. engr.

Bids Asked October 21

Ia., Knoxville—F. Crawford, clk., WW imprvs., water lines and reservoir. $140,000. Extended date; Foth & Boyd, 304 Architects Bldg., Green Bay, Wis., engrs. CD 9/9—ENR 9/12.

Bids Asked October 28

†Va., Cape Henry—Con. Q. M., Fort Monroe, filtration plant addns., water supply sys. at Big Bethel; adv. ENR 10/3.

Bids Asked

†Tex., Flour Bluff—P. Wks. Officer, Naval Air Station, U. S. Courthouse, Corpus Christi, water sys., 2 m.g. rein.-con. ground reservoir, elevated tank, elevated steel, concrete reservoir and tower, water distr. sys., pumping unit, etc. $250,000; complete sanitary sewerage sys., disposal plant, $200,000. Robert & Co., Inc., Bona Allen Bldg., Atlanta, Ga., archts. and engrs.

LOW BIDDERS

†Calif., Stockton—Con. Q.M., Fort Mason, San Francisco, Sept. 24, 150,000 gal. elevated steel tank, piping, accessories at Stockton Airport, from Pittsburgh-Des Moines Steel Co., Rialto Bldg., San Francisco, $19,975.

N. Y., New York—Bd. Water Supply, R. H. Burke, secy., 346 Bway., Sept. 24, Contr. 352, furnishing, testing, del., 48, 36, 8, 6 and 5 in. bronze gate-valves, 2½ in. bronze operating valves and needle-valve operating equip. for Delaware Aqueduct, from A. P. Smith Mfg. Co., 545 N. Arlington Ave., East Orange, N. J. $248,050. CD 9/4—ENR 9/12.

CONTRACTS AWARDED

Conn., Fairfield—Bridgeport Hydraulic Co., 835 Main St., Bridgeport, 2 story, 22x31 ft., monolithic, rein.-con., timber Spanish tile chlorinating plant, Fairfield Reservoir. Owner builds. $15,000. W. J. Skinner, 629 Railroad Ave., Bridgeport, archt.

Fla., St. Petersburg—Comrs. Pinellas Co., Clearwater, rebuilding, exten. water lines to Mitchell Beach, St. Petersburg, Sunset Point, Indian Rocks and other beach developments. WPA. $172,827. R. Schroder, Jacksonville, state WPA administrator.

N. Y., Yonkers—Bureau Water Exten., City Hall, rehabilitating slow sand filters at tube well pump sta. Nepperhan Ave. WPA. $111,059. H. J. Carroll, in charge.

Tenn., Johnson City—M. N. Snoderly, city mgr., reservoir. WPA. $92,982. H. Green, Johnson City, engr.

Tex., Abilene—W. H. Hair, mayor, new filtration plant, coagulation and sedimentation basins, pump station, chemical headhouse, main connection to water lines, etc. WPA. $80,000. R. C. Hoppe, Abilene, engr. Freese & Nichols, Capps Bldg., Fort Worth, engrs.

Tex., Bryan—I. Langford, mayor, imprv., exten. water sys. WPA. $34,453.

Tex., Denison—C. C. Hicks, city secy., 6 m.g. daily capacity water filtration plant, pumphouse, etc., to Mitchell Darby Co., 2612 Leeland St., Houston. $116,490. Est. $125,000. Former bid rejected. CD 7/16—ENR 7/18, under LB.

†Va., Langley Field—Con. Q. M., watermains, to A. G. Pinkston & Co., Monticello Arcade, Norfolk, $19,740.

Wash., Tacoma—By-pass pipeline at Hood St. reservoir, force account. $18,780. C. D. Forsbeck, City Hall, engr.

Que., Cadillac—Province of Quebec, c/o Dpt. Mines, Quebec City, water line, pump, pump house, day labor. $15,000. C. C. Lindsay, 159 Craig St. W., Montreal, engr. CD 4/18—ENR 4/25.

Sask., Swift Current—Concrete water reservoir, to W. Newman, 841 Tache St. $13,000. CD 8/30—ENR 9/5.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Ala., Florence—Sanitary sewerage sys. exten.

Colo., Denver—Sanitary Sewers, Sanitary Sewer Dist. 3. $107,307.

Fla., Jacksonville—Incinerator, South Jacksonville, $30,000; drainage, Green, Corby, Stockton Sts., $43,000; storm sewers, Jefferson, Pearl and Waller Sts., Seminole Rd. and from Deer Creek to Florida Ave., from Pearl St. to Springfield Blvd., Long Branch. $50,500.

Ind., Elwood—Bd. P. Wks., G. M. Bonham, mayor, C. D. Sizelove, clk., City Hall, preliminary plans sewage treatment plant and sewerage sys. $450,700. Russell B. Moore & Co., 930 Indiana Fythian Bldg., Indianapolis, consult engrs. CD 4/30—ENR 5/2.

Ind., Franklin—Sewage plant, exten. intercepting sewers to canning plants. Over $30,000 with equip.

Ia., Lenox—Exten. sanitary sewers. $40,000. Henningson Eng. Co., Service Life Bldg., Omaha, Neb., engr.

Ia., Sioux City—D. F. Loepp, mayor, storm sewer, paving, 4 bridges, drainage, Casselman St. $120,000. K. Gaynor, city engr.

Minn., Albany—E. S. Winter, city clk., sanitary sewerage sys. and sewage treatment plant. $30,000. E. A. Briggs, 1955 University Ave., St. Paul, engr.

Minn., Forest Lake—O. Struble, city clk., sewage treatment plant. $25,000 (not official). Druar & Millnowski, 1411 Pioneer Bldg., St. Paul, engrs.

Mo., St. Louis—Walton Rd. Sanitary Sewer Dist. voted $81,000 bonds, sewers. $324,000. E. A. Fulton, 3 S. Meramec Ave., consult. engr.

N. J., Montclair—Sanitary sewers, grading streets. $51,623. WPA. J. B. Hayden, Town Hall, town and WPA engr.

N. Y., Medina—Village Bd. approved $135,000 bond issue, sewage disposal plant, Glenwood Lake, near Gulf St. $143,000. Wm. S. Lozier, Inc., 10 Gibbs St., Rochester, engrs. CD 9/20.

N. Y., Niagara Falls—E. W. Mirrington, mayor, exten. sewers, water lines to site of Bell Aircraft plant, also exten. runways at municipal airport. Over $15,000. H. W. Clarke, city engr.

O., Canton—Repairing sewage disposal plant. $25,000 or more. J. Shisler, city engr.

Pa., Berwick—Boro Council, combined storm and sanitary sewers, etc. $41,000. Boro Eng. Dpt., c/o Boro, engrs.

Pa., Camp Hill—Boro, sewerage sys. exten. Over $25,000. Albright & Friel, 1520 Locust St., Phila., engrs.

Wash., Pullman—Bond election Dec. 5, sewage disposal plant, $129,570. Stevens & Koon, Spalding Bldg., Portland, Ore., engrs. CD 9/17—ENR 9/26.

Ont., Hamilton—Storm sewers, MacDonald and Homewood Aves., concrete tunnels, Dundurn St. and Homewood Ave., $164,000; storm sewer, Mars Ave., Emerald and Douglas Sts., manholes and appurtenances, $25,000. W. L. McFaul, City Hall, engr.

BIDS ASKED

Bids Asked October 21

N. Y., Beekman—At office Dpt. Correction, J. A. Lyons, comr., State Office Bldg., Albany.

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